Are P/E Ratios Predictable?

by

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What is a P/E Ratio?

- Financial ratio measuring the price of a stock relative to its earnings:
  \[
P/E = \frac{Price}{Earnings}
  = \frac{Market\ Cap}{Earnings}
  = \frac{Share\ Price}{Earnings\ Per\ Share}
\]

- Useful for quick assessment whether a stock is cheap or expensive.
- Earnings yield is more intuitive.
What is the Earnings Yield?

• Earnings yield is the reciprocal of the P/E ratio:

\[ Earnings \text{ Yield} = \frac{Earnings}{Price} \]

• If earnings were paid out as dividends, then the earnings yield would be the percentage return from buying the stock at a given price.

• Useful for quick comparison to other yields e.g. for government bonds so as to assess whether a stock is cheap or expensive considering future earnings prospects and risk.
Common Assumptions

- In academic papers and books on corporate finance it is sometimes assumed that P/E is constant forever.
- Investors sometimes assume that a stock will again trade at its historical average P/E.
- Let’s check if these notions are correct ...
### Wal-Mart (Financial Statistics)

<table>
<thead>
<tr>
<th>Wal-Mart (1994-2014)</th>
<th>Mean</th>
<th>Stdev</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROA</td>
<td>9.1%</td>
<td>0.8%</td>
</tr>
<tr>
<td>ROE</td>
<td>22.6%</td>
<td>1.6%</td>
</tr>
<tr>
<td>Net Profit Margin</td>
<td>3.3%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Equity / Assets</td>
<td>39.9%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Earnings Retained</td>
<td>47.5%</td>
<td>29.2%</td>
</tr>
<tr>
<td>Dividend / Net Income</td>
<td>22.0%</td>
<td>7.1%</td>
</tr>
<tr>
<td>Net Share Buyback / Net Income</td>
<td>30.5%</td>
<td>24.7%</td>
</tr>
</tbody>
</table>

Wal-Mart has been a very stable company except for retained earnings.
Wal-Mart (Share Price and P/E)
Wal-Mart (P/E Statistics)

P/E
Mean: 23.2
Stdev: 10.0
Min: 10.5
Max: 58.7
Wal-Mart (Earnings Yield)

Wal-Mart

Wal-Mart (1994-2014)

Share Price / USD

Earnings Yield / %

1995 2000 2005 2010

1995 2000 2005 2010
Wal-Mart (Earnings Yield Statistics)

**Earnings Yield**
- Mean: 5.1%
- Stdev: 1.9%
- Min: 1.7%
- Max: 9.6%
Conclusion

- P/E and Earnings Yield are not constant and rarely equal their mean.
- Even stable companies have volatile P/E and Earnings Yield.
- Future P/E and Earnings Yield are not easy to predict.
Further Reading

Plots are taken from the paper:

- **Portfolio Optimization and Monte Carlo Simulation**
  Authored by Magnus Erik Hvass Pedersen.

Available on the internet: